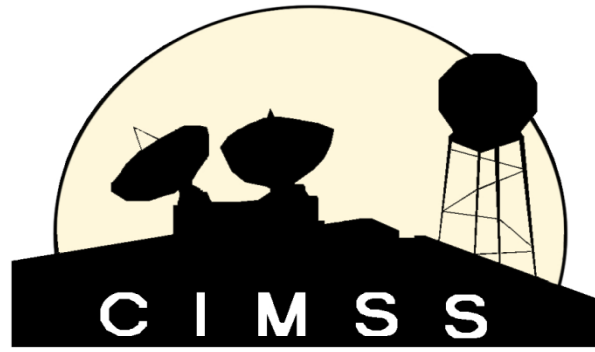


# Real-time Access to Weather Satellite Data and Products on Mobile Devices



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## Abstract

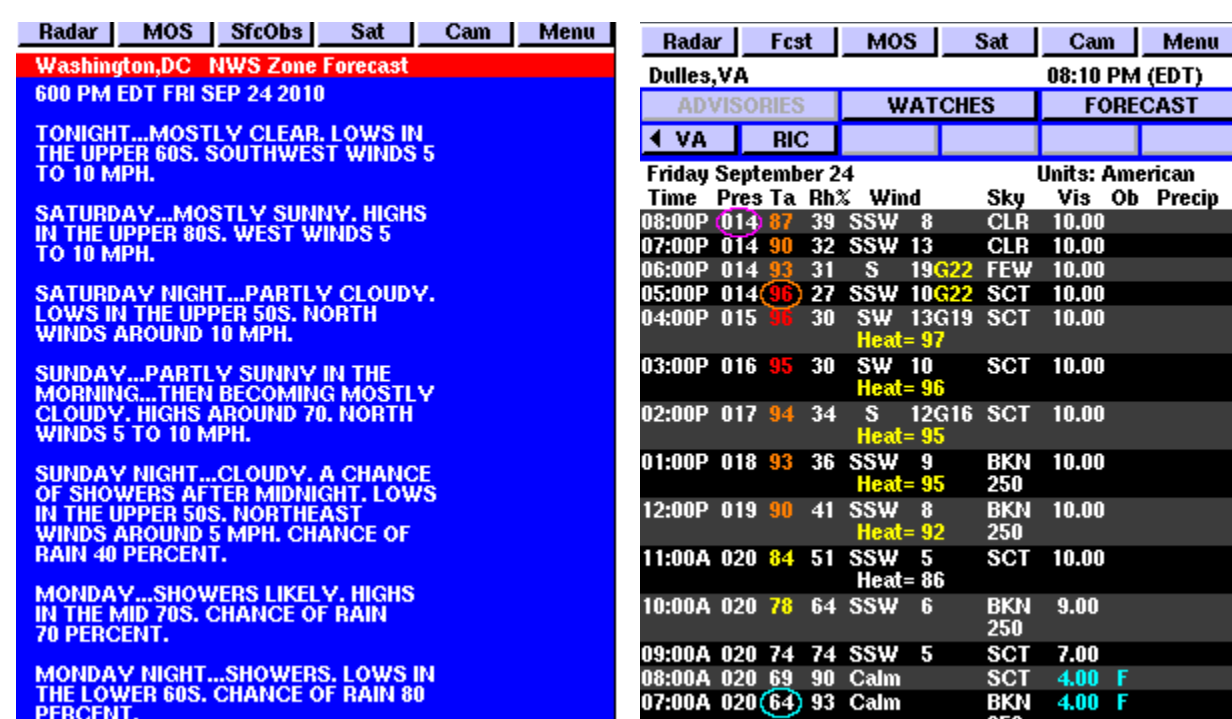
A major challenge in mobile-device map application development is to offer rich content and features with simple and intuitive controls and fast performance. Our goal is to bring visualization and animation of near real-time weather and earth observation information derived from satellite and sensor data to mobile devices. Our robust back-end processing infrastructure can deliver content in the form of images, shapes, and raw data to a variety of desktop software, browsers, and mobile devices on demand. We have developed custom interfaces for low-bandwidth browsers (including mobile phones) and high-feature browsers (including smartphones), as well as native applications for Apple iOS devices. Mobile devices offer time- and location-awareness and persistent data connections, allowing us to tailor displays to the user's geographic and time context.

WxSat is the first iOS app to display and animate full resolution real-time geostationary satellite data. In its current form, WxSat leverages SSEC WMS servers to provide global coverage for visible, infrared, and water vapor channels to iPhones, iPads, and iPod touches. The capability exists to deliver directly to the user's hand any product managed by the WMS, allowing the user to overlay, animate, and freely roam around any combination of products they choose. We already host over 150 products that range from model output fields to convective initiation targets to MODIS true-color imagery.

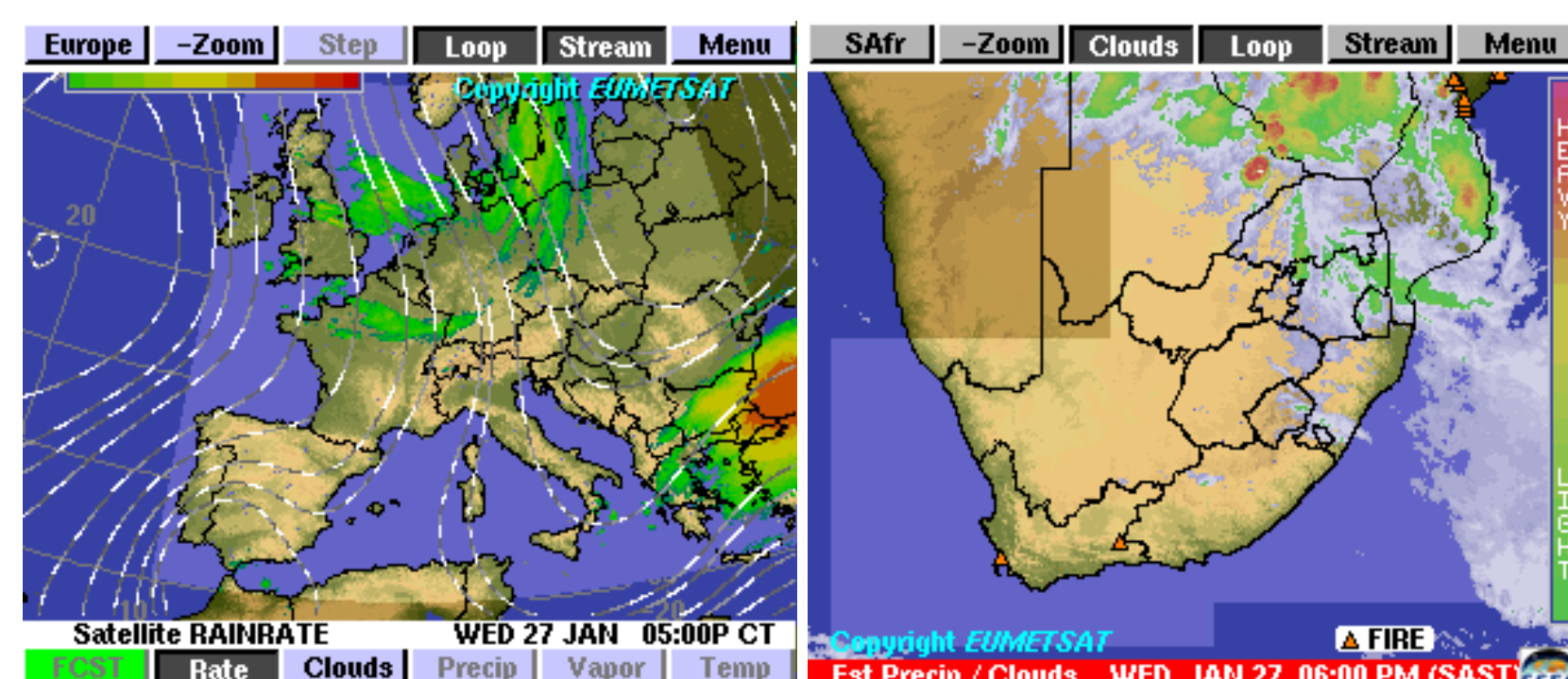
<http://wms.ssec.wisc.edu> for more information.

## Background and History

For more than five years, the Space Science & Engineering Center (SSEC) at the University of Wisconsin-Madison has been creating and disseminating time-critical meteorological products specifically tailored for mobile devices. The PDA Animated Weather (PAW) service was designed to be a technology demonstrator for current and ongoing research being conducted at SSEC. The site contains a collection of real-time products that are a blend of traditionally observed, measured, and computed meteorological fields.



Original PAW: Text output for City forecasts (left) and surface observations (right).



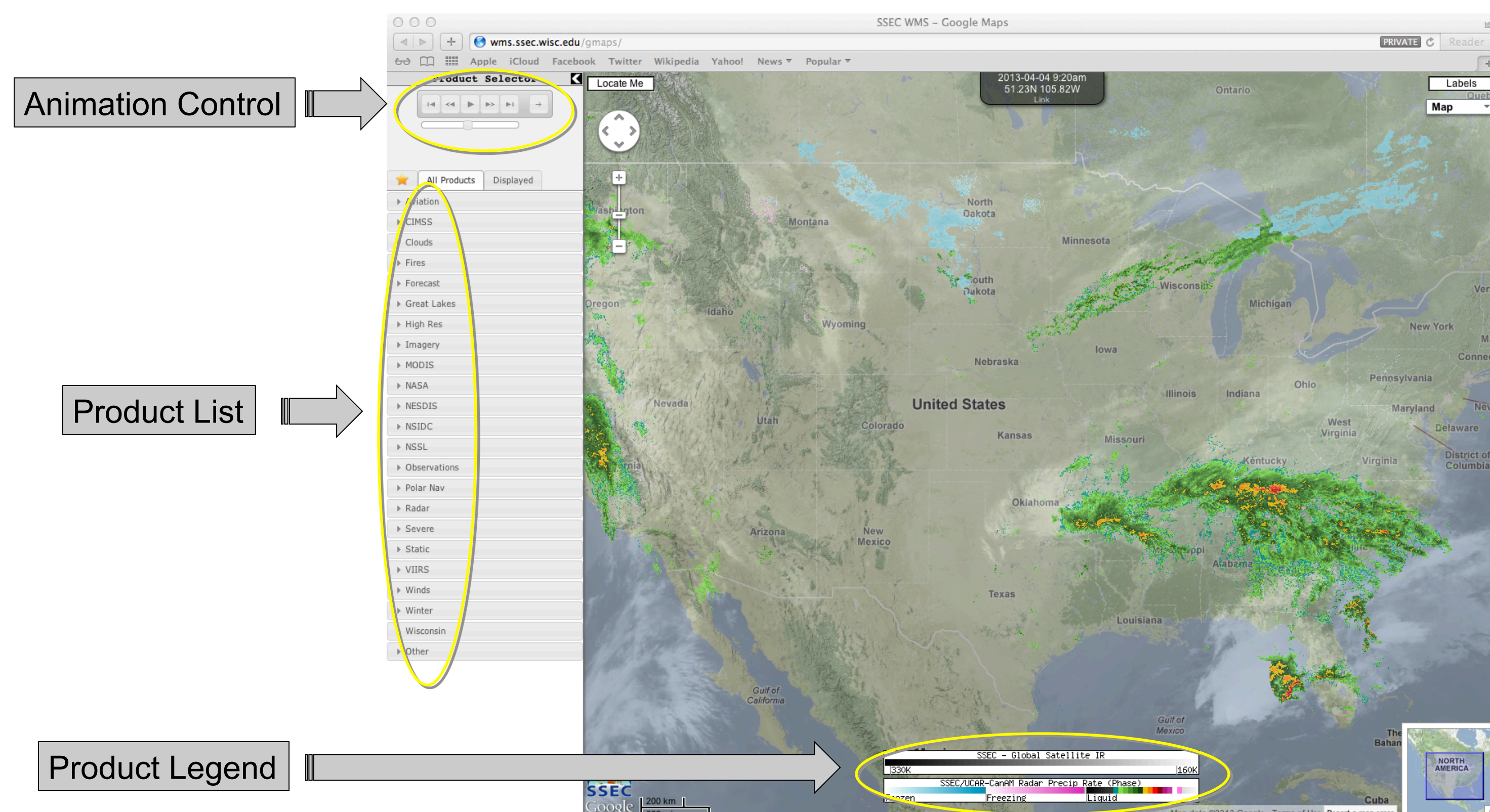
Original PAW: GOES IR-derived precipitation estimate, with satellite-derived streamlines (left) and MODIS-derived wild fires as triangle symbols (right).

<http://www.ssec.wisc.edu/data/paw/>

## Products

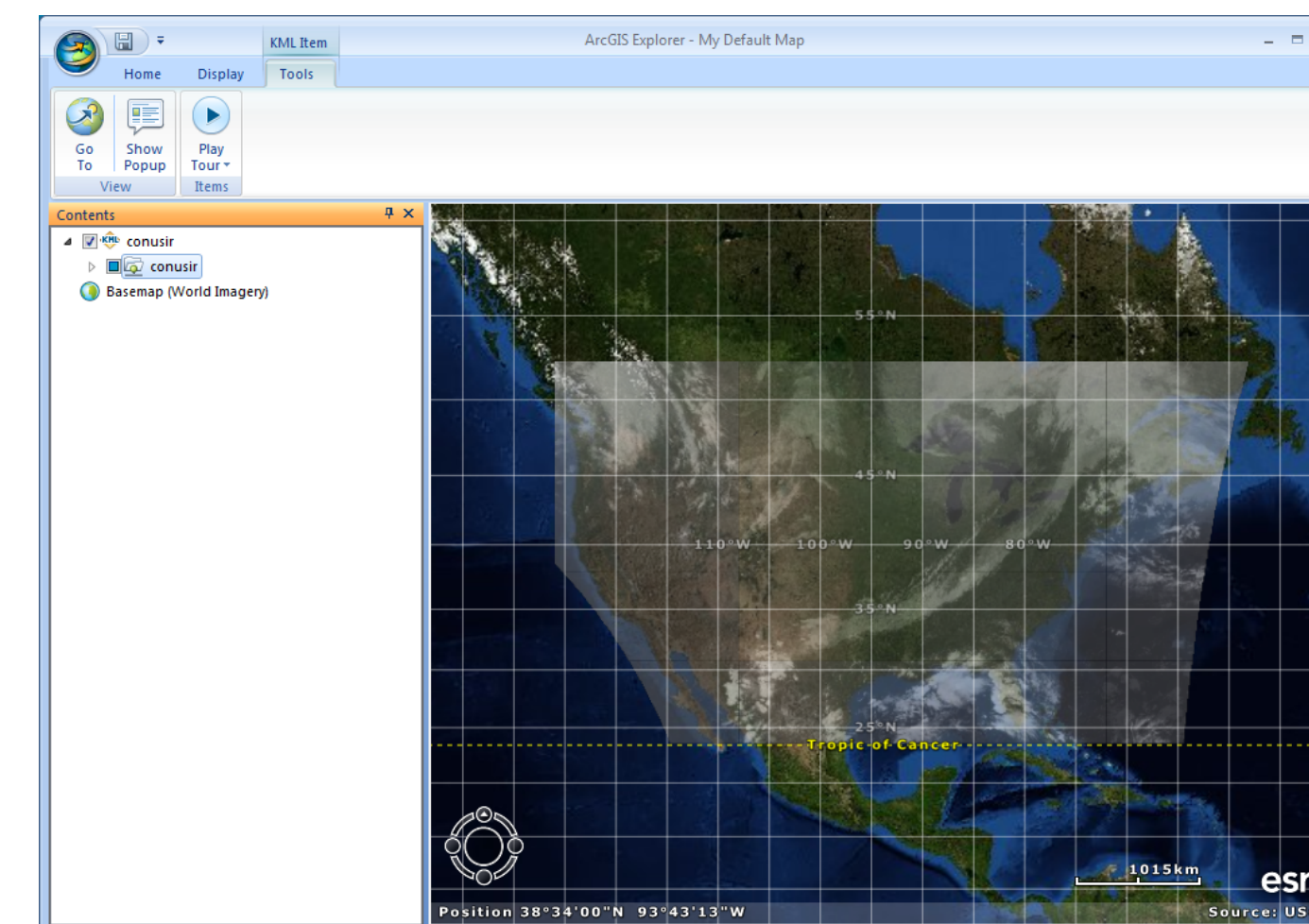
A web-based interface allows users to preview and manage layers. We are staging 150+ products, many that are near real-time satellite images or meteorological derivations.

<http://wms.ssec.wisc.edu/gmaps/>

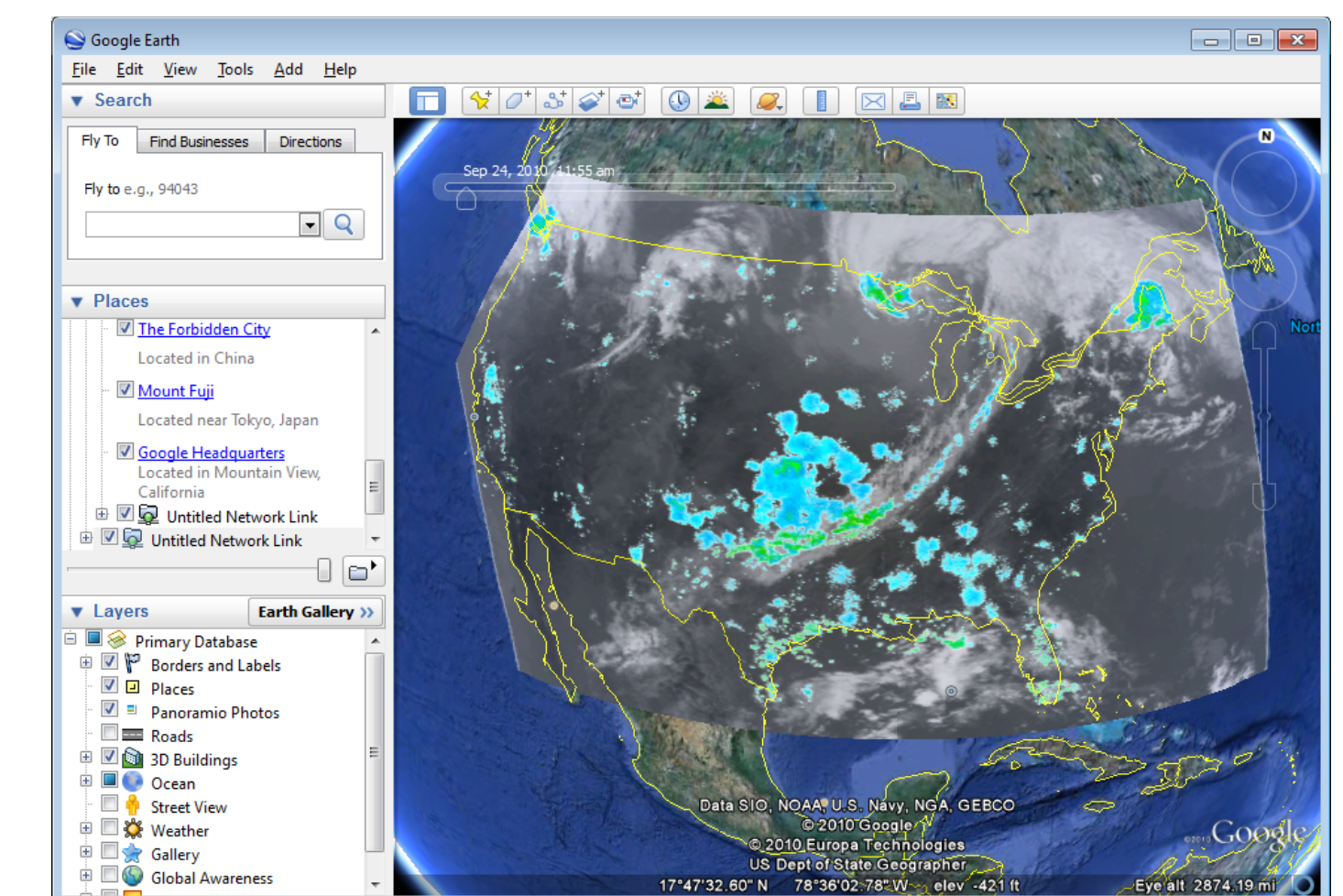


## Client applications

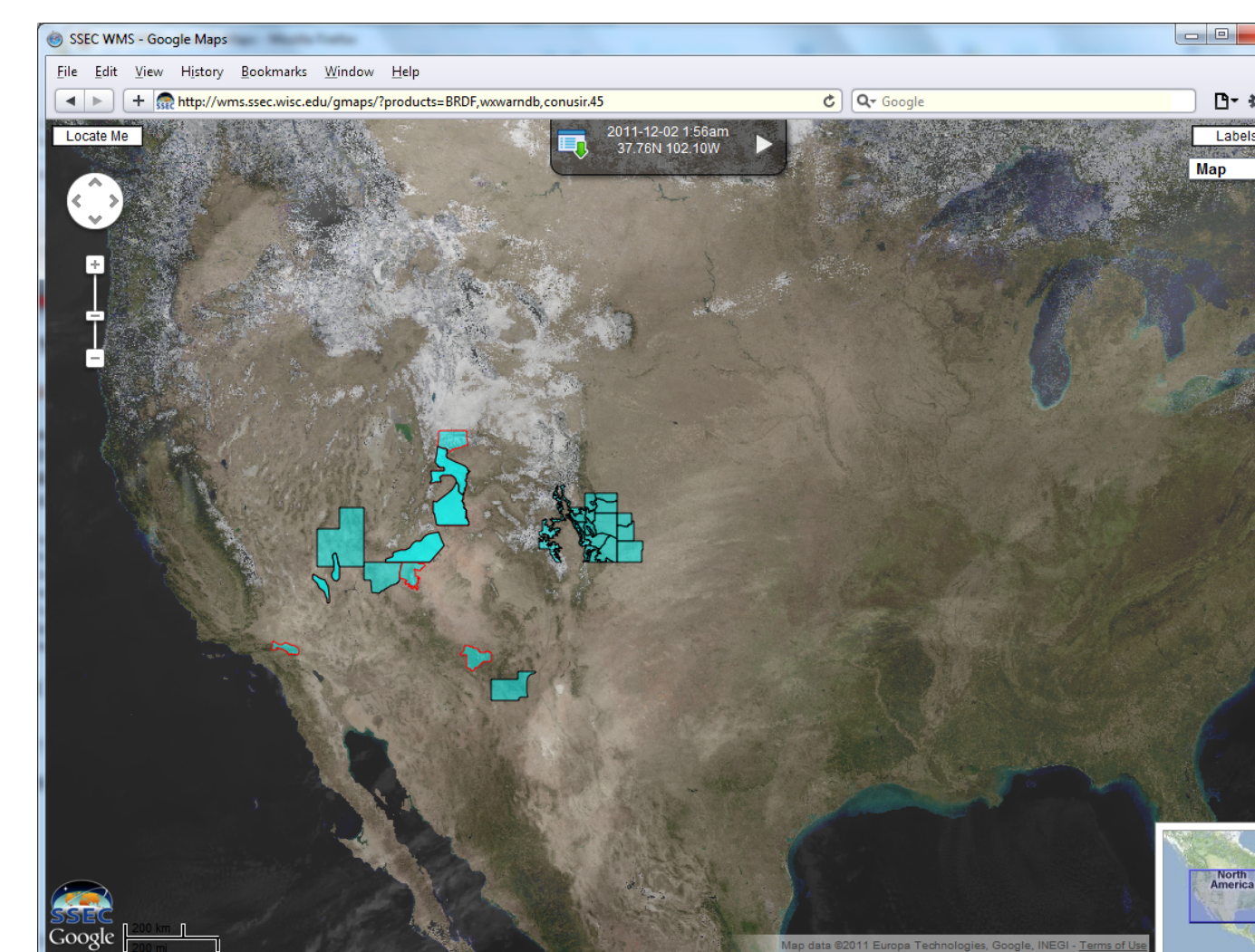
A variety of client applications can access the products directly, from GIS software to desktop browsers to mobile devices. Both mobile apps and web pages provide user location options. All of the same products are available in all of the interfaces.



ArcGIS Explorer



Google Earth



Desktop and Mobile Browsers  
<http://wms.ssec.wisc.edu/gmaps>



<http://wms.ssec.wisc.edu/simple>

## WxSat iOS App

WxSat is a native iOS app for both the iPhone and iPad. It provides a simple way for anyone to explore real-time global composite imagery. Data are from all available geostationary and polar orbiting satellites.

<http://wms.ssec.wisc.edu/app/>

## WxSat Features

- Global composites of full-resolution Visible, Infrared and Water Vapor:
  - ~4km IR and Water Vapor
  - ~1km Visible
- Clean interface with clear options:
  - Visible
  - Infrared
  - Water Vapor
- Toggle map overlay
- Animation and time controls:
  - Select animation time frame
  - Select specific day/time
- Freely pan and zoom



## Acknowledgements

Funding for this research was provided by the Space Science & Engineering Center and NOAA.